

### **REMARKS**

Claims 1, 3-6, 9, 10, 12-16, 19-24, 26 and 30-36 are pending in the application. Claims 1, 10, 20, 33 and 36 are amended herein. Claims 30 and 31 are cancelled herein. The amendments to Claims 1, 10 and 20 simply incorporate limitations from previously presented Claims 30-32 and 34 and thus do not raise new issues. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

If the Examiner relies on a new ground of rejection or a new reference in rejecting the Claims in the next Office Action, a Final Office Action would not be appropriate since the amendments to the claims do not raise new issues. Under present practice, second or subsequent actions on the merits shall be final, except where the Examiner introduces a new ground of rejection that is not necessitated by Applicant's amendment of the claims. **See MPEP § 706.07(a).**

### **SPECIFICATION**

The specification stands objected to for certain informalities. Paragraph [0027] is amended herein to replace  $M_{clutch}$  with  $M_{friction\ device}$ . Claims 33 and 36 are also amended herein to replace  $M_{clutch}$  with  $M_{friction\ device}$ . Reconsideration and withdrawal of this objection are respectfully requested.

**REJECTION UNDER 35 U.S.C. § 102**

Claims 1, 3-6, 9-10, 12-16, 19-24, 26, and 30-32 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Buchanan et al. (U.S. Pat. No. 6,715,597). This rejection is respectfully traversed.

With respect to Claim 1, Buchanan does not at least show, teach or suggest a controller that estimates a temperature state based on: A) an approximate thermal inertia of a friction device; and/or B) heat rejection of at least one of a friction device and a cooling system. Note that features A and B were previously recited in Claims 30 and 31.

The Examiner alleges that features A and B are disclosed in FIG. 3A of Buchanan. Applicant respectfully disagrees. Applicant is unable to find any disclosure or suggestion of either an approximate thermal inertia or heat rejection in any of the steps of FIG. 3A of Buchanan. Applicant is also unable to find any disclosure or suggestion of either thermal inertia or heat rejection anywhere in Buchanan. Note that the terms "thermal inertia", "inertia", "heat rejection" and "rejection" can not be found in Buchanan.

Approximate thermal inertia or thermal mass refers to the product of mass of a body and the specific heat capacity for the material of that body, and typically has a unit of measure of joules (J)/°C. Thermal inertia refers to a measure of thermal mass and the velocity of a thermal wave which controls the surface temperature of a material or body. Thermal inertia is the square root of the product of a bulk thermal conductivity and volumetric heat capacity of a material or body. Thermal inertia typically has a unit of measure of  $\text{Jm}^{-2}\text{K}^{-1}\text{s}^{-1/2}$  or tiu. Heat rejection refers to a rate at which a device

releases heat for a particular temperature and typically has unit of measure of watts (W)/°C.

As best understood by Applicant, FIG. 3A discloses the monitoring, determining or using of a sump temperature, a cooling fluid temperature, an input torque, a slip speed, power transfer, bulk clutch temperature, cooling fluid flow, and engine speed. However, FIG. 3A does not disclose the monitoring, determining or using of approximate thermal inertia and/or heat rejection, as claimed.

For anticipation to be present under 35 U.S.C. §102(b), there must be no difference between the claimed invention and the reference disclosure as viewed by one skilled in the field of the invention. *Scripps Clinic & Res. Found. v. Genentech, Inc.*, 18 USPQ.2d 1001 (Fed. Cir. 1991).

Thus, Buchanan does not disclose each and every feature of Claim 1. Therefore, Claim 1 is allowable for at least the above reasons. Claims 3-6, 9 and 33-36 ultimately depend from Claim 1 and are allowable for at least similar reasons.

With respect to Claim 10, Buchanan does not at least show, teach or suggest estimating a temperature state of a component of a friction device based on a loop time of a thermal model of the friction device.

The Examiner alleges that the estimating of a temperature state of a component of a friction device based on a loop time of a thermal model of the friction device is disclosed in FIG 3A. Applicant is unable to find in FIG. 3A or anywhere else in Buchanan mention of a loop time, loop time of a thermal model, or the estimation of a temperature state based on a loop time of a thermal model.

Therefore, Claim 10 is allowable for at least the above reasons. Claims 12-16 and 19 ultimately depend from Claim 10 and are allowable for at least similar reasons.

With respect to Claim 20, Buchanan does not at least show, teach or suggest estimating a temperature state of a friction device based on a thermal model of the friction device, where the thermal model performs as a low-pass filter.

The Examiner admits that Buchanan does not disclose a low pass filter. Thus, Buchanan does not disclose thermal model of a friction device that performs as a low-pass filter. The Examiner, however, alleges that Hosseini et al. (U.S. Pat. No. 5,950,789) discloses a low pass filter.

As best understood by Applicant, Hosseini discloses the use of a low pass digital filter to provide an average clutch slip value. The low pass digital filter is used to filter a determined average clutch slip value. In other words, a low pass filter is added to the system to filter a determined value. Hosseini does not disclose a thermal model of a friction device that performs as a low pass filter. A thermal model represents thermal characteristics of a device and typically includes multiple parameters. The filter of Hosseini is not part of nor does it represent a thermal model of a device. Also, the filter of Hosseini is added to an existing system to filter a single parameter. Thus, Buchanan and Hosseini alone or in combination do not disclose each and every element claimed.

Therefore, Claim 20 is allowable for at least the above reasons. Claims 21-24, 26 ultimately depend from Claim 20 and are allowable for at least similar reasons.

### **ALLOWABLE SUBJECT MATTER**

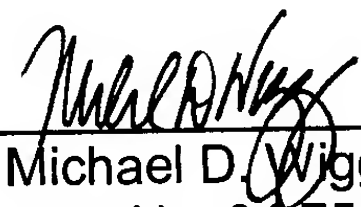
The Examiner states that Claims 33 and 35-36 would be allowable if rewritten in independent form. Applicant reserves the right to amend the claims into their originally allowable form at a later date if needed.

### **CONCLUSION**

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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